### ATTORNEY DOCKET NO.: 71212

### IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patentee : BIAGI et al. Patent No. : 7090641

Issued : August 15, 2006

For : ULTRASOUND IMAGE FOCUSING METHOD AND RELATIVE

ULTRASOUND SYSTEM

Dated : September 19, 2006

Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450 ATTN.: Mail Stop DAC

# REQUEST FOR CERTIFICATE OF CORRECTION UNDER 37 CFR § 1.322

Patentee respectfully requests that a Certificate of Correction under 37 CFR §1.322 be issued for the above identified patent properly identifying the Assignee as Actis Active Sensors S.r.l. and Esaote S.p.A.. The Letters Patent received by Patentee's representatives lists the Assignee as Actis Active Sensors S.r.l. and Esaqte S.p.A.. This is incorrect.

For verification, Patentee submits a copy of the Assignment clearly showing the Assignee as Actis Active Sensors S.r.l. and Esaote S.p.A..

For your convenience, Patentee encloses a copy of the Letters Patent cover page with the correction indicated and a Certificate of Correction.

Based upon this evidence, Patentee respectfully requests that a Certificate of Correction be issued for the above identified patent properly identifying the Assignee as Actis Active Sensors S.r.l. and Esaote S.p.A., at no cost to the Patentee as this was due to U.S. Patent Office error.

# Favorable action is respectfully requested.

Respectfully submitted for Patentee(s),

By:

John James McGlew Registration No. 31,903

For: McGLEW AND TUTTLE, P.C.

JJM: 71212-5

Enclosures: Copy of Incorrect Letters Patent cover page

Certificate of Correction

Assignment

DATED: September 19, 2006

SCARBOROUGH STATION

SCARBOROUGH, NEW YORK 10510-0827

(914) 941-5600

NOTE: IF THERE IS ANY FEE DUE AT THIS TIME, PLEASE CHARGE IT TO OUR DEPOSIT ACCOUNT NO. 13-0410 AND ADVISE.



US007090641B2

# (12) United States Patent Biagi et al.

(10) Patent No.:

US 7,090,641 B2

(45) **Date of Patent:** 

Aug. 15, 2006

(54)	ULTRASOUND IMAGE FOCUSING METHOD
	AND RELATIVE ULTRASOUND SYSTEM

- Inventors: Elena Biagi, Florence (IT); Leonardo Masotti, Florence (IT): Marco Scabia, Florence (IT); Iacopo Rossi, Grosseto (IT); Nicola Dreoni, Florence (IT)
- Assignees: Actis Active Sensors S.r.l., (IT); Esaqte S.p.A., (IT)
- Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 185 days.
- (21)Appl. No.: 10/718,333
- (22)Filed: Nov. 20, 2003
- (65)**Prior Publication Data** US 2004/0143187 A1 Jul. 22, 2004
- (30)Foreign Application Priority Data Nov. 22, 2002 (IT) ..... FI2002A0228
- (51)Int. Cl. A61B 8/00 (2006.01)
- (52)U.S. Cl. 600/443
- (58)Field of Classification Search ...... 600/437. 600/442, 443, 447; 73/1.82, 602; 367/46, 367/119 See application file for complete search history.

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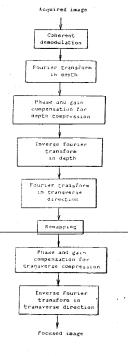
\* cited by examiner

Primary Examiner-Francis J. Jaworski (74) Attorney, Agent, or Firm-McGlew & Tuttle, PC

(57)**ABSTRACT** 

The method comprises the phases of: sending a series of excitation ultrasonic signals to a volume being investigated, by means of an array of transducers aligned in a transverse direction (x), said ultrasonic signals propagating in depth in said volume according to a direction of propagation (y); acquiring, by means of said transducers, signals reflected from reflectors located in the volume being investigated; performing on said reflected signals a transform in the transverse direction from a spatial domain (x,y), defined by said transverse direction (x) and by said direction of propagation (y), to a first transformed domain; applying, in the transformed domain, a two-dimensional transformation, to straighten every curved image (Ip1, Ip2, Ip3) of a reflector in said volume being investigated and make it essentially orthogonal to the direction of propagation (y); compressing, in the transverse direction (x) each of the straightened curves (Im1, Im2, Im3) to concentrate said straightened image in a zone centered at the level of the position of said reflector along said transverse direction (x).

#### 20 Claims, 24 Drawing Sheets



Attorney	Docket	No.	
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## ASSIGNMENT OF PATENT APPLICATION

WHEREAS, We, the undersigned have invented certain new and useful improvements in an invention entitled:

<u>ULTRASOUND IMAGE FOCUSING METHOD AN RELATIVE ULTRASOUND SYSTEM</u>

the invention(s) and improvement(s) set forth therein, and any and all continuations, continuations-in-part, divisionals, and renewals of and substitutes for said application for said Letters Patent, and all the rights and privileges under any and all Letters Patent that may be granted therefor in any country, and any reissues, or reexaminations, or extensions of said Letters Patent.

AND WHEREAS, 1) Ac	tis Active Sensors S.r.l. 2) Esaote S.p.A.
with a principal place of busi	ness at:
1) Via Baldanzese 17 - 5004	l CALENZANO, FIRENZE Italy
2) Via Ruffino Aliora 32 – 1	5033 CASALE MONFERRATO, ALESSANDRIA Italy
	ssignee) is desirous of acquiring an interest therein-and-in the Letters
Patent to be obtained therefo	· · · · · · · · · · · · · · · · · · ·

We agree that, when requested, we will, without charge to said Assignee but at its expense, sign all papers, take all rightful oaths, and do all acts which may be necessary, desirable or convenient for securing and maintaining patents for said inventions in any and all countries and for vesting title thereto in said Assignee, its successors, assigns and legal representatives or nominees.

We authorize and empower the said Assignee, its successors, assigns and legal representatives or nominees, to invoke and claim for any application for patent or other form of protection for said inventions filed by it or them, the benefit of the right of priority provided by the International Convention for the Protection of Industrial Property, as amended, or by any convention which may henceforth be substituted for it, and to invoke and claim such right of priority without further written or oral authorization from us.

We hereby consent that a copy of this assignment shall be deemed a full legal and formal equivalent of any assignment, consent to file or like document which may be required in any country for any purpose and more particularly in proof of the right of the said Assignee or nominee to claim the aforesaid benefit of the right of priority provided by the International convention which may henceforth be substituted for it.

We covenant with said Assignee, its successors, assigns and legal representatives, that the rights and property herein conveyed are free and clear of any encumbrance, and that we have full right to convey the same as herein expressed.

IN WITNESS WHEREOF, We have hereunto signed our names on the day and year set forth below.

&	First Inventor=s Name Elena BIAGI / Lux his	DATE	27 NOV. 2003
	First Inventor=s Signature (Cock how)		Day/Month/Year
&	Second Inventor=s Name Leonardo MASOTTI	DATE	··-
	Second Inventor=s Signature (legative)	·	Day/Month/Year
&	Third Inventor=s Name Marco SCABIA	DATE	27 NOV. 2003
	Third Inventor=s Signature		Day/Month/Year
&	Fourth Inventor=s Name Iacopo ROSSI	DATE	27 NOV. 2003
	Fourth Inventor=s Signature		Day/Month/Year
&	Fifth Inventor=s Name Nicola DREONI	DATE	2 7 NOV. 2003
	Fifth Inventor=s Signature Weeker Dean:		Day/Month/Year
&	Sixth Inventor=s Name	_ DATE	
	Printed Name Sixth Inventor=s Signature		Day/Month/Year
&	Seventh Inventor=s Name	_ DATE	
	Printed Name Seventh Inventor=s Signature		Day/Month/Year
&	Eighth Inventor=s Name	_ DATE	
	Eighth Inventor=s Signature		Day/Month/Year
&	Ninth Inventor=s Name	DATE	
	Printed Name Ninth Inventor=s Signature	· · · · · · · · · · · · · · · · · · ·	Day/Month/Year
&	Tenth Inventor=s Name	DATE	
	Printed Name Tenth Inventor=s Signature		Day/Month/Year

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# UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

Page 1 of 1

APPLICATION NO.: 10/718,333

ISSUE DATE : August 15, 2006

INVENTOR(S) : BIAGI et al.

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

The Assignee be changed to:

Actis Active Sensors S.r.l. and Esaote S.p.A.

MAILING ADDRESS OF SENDER (Please do not use customer number below):

McGlew and Tuttle, PC Scarborough Station Scarborough, New York 10510

This collection of information is required by 37 CFR 1.322, 1.323, and 1.324. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1.0 hour to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Attention Certificate of Corrections Branch, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.